Learning-Based Project Reviews (LBPRs)

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We'll Share a Conversation about Learning-Based Project Reviews.

Intent

- Share a concept
  - Descriptive, not prescriptive
- Begin a conversation
- Rethink about our project review and learning practices
- Invite you to be part of the conversation

Agenda

- *Why is learning important to projects?*
  - *Success rates*
- What is the basis for our concept?
  - KSC as a source
- What are learning based-project reviews?
  - Research results
- How can you participate?
  - Think about and share reflections

Why is this Work Important? Project Success Rates

	1994	1996	1998	2000
Succeeded	16%	27%	26%	28%
Failed	31%	40%	28%	23%
Challenged	53%	33%	46%	49%

Standish Group's Chaos Studies (Johnson, 2001)

The questions become:
- Why are we so challenged?
- How can we become better?

Why is this Work Important? Lessons Learned

What do you produce a lesson learned about?	**Percent of Project Managers**
Tasks that failed to meet expectations or minor adjustments/problems	40%
Tasks that met expectations	36%
Tasks that had major problems	62%
If you produce a lesson learned, when do you produce a lesson learned?	
Throughout the project as the opportunity arises	31%
Throughout the project at regular review meetings	26%
At the end of the project	69%
How do you know what to produce a lesson learned about?	
Compare the actual results with the original or baseline plan for all tasks	43%
The things they remember	45%

(Kotnour, 1999)

Why is this Work Important?
Learning is More than Lessons Learned

- Premise:
  - Recognize the importance and value of lessons learned
  - Projects are already learning (mission success shows this)—just raising awareness, appreciation, and viewing from a different perspective

- How can we help the project team learn better?
  - Why do we build lessons learned primarily at the end?
    - What are we missing along the way?
    - Are we learning too late?
    - Why do we view lessons learned as an extra expense at the end of the project?
  - Why do we view lessons learned as a formal process?
    - How does this view restrict our thinking and impact?
  - How can we view our existing processes and tools from a learning perspective?

How do we make learning an everyday occurrence?

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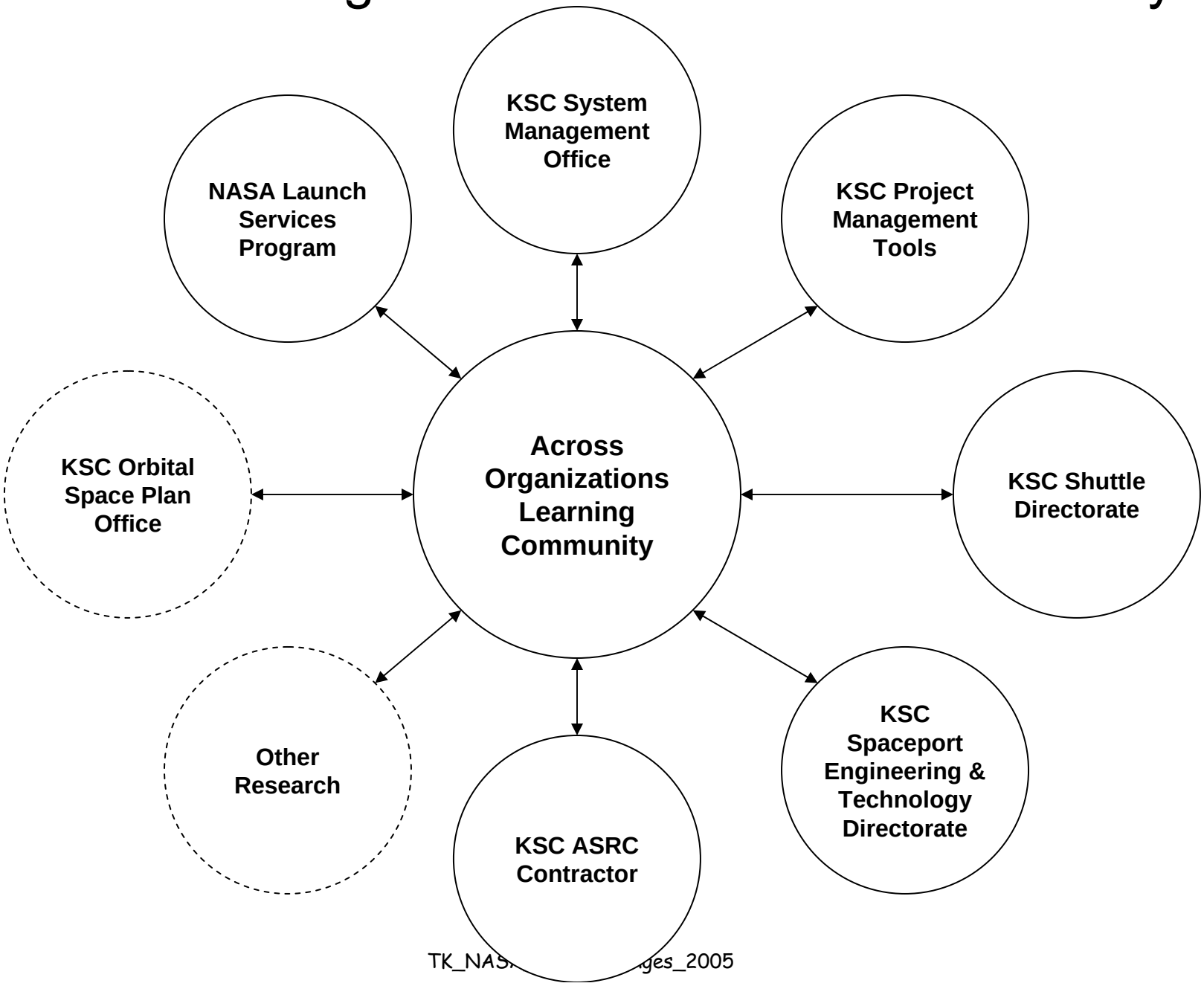
NASA/USRA's Center for Program/Project Management Research Supported this Research.

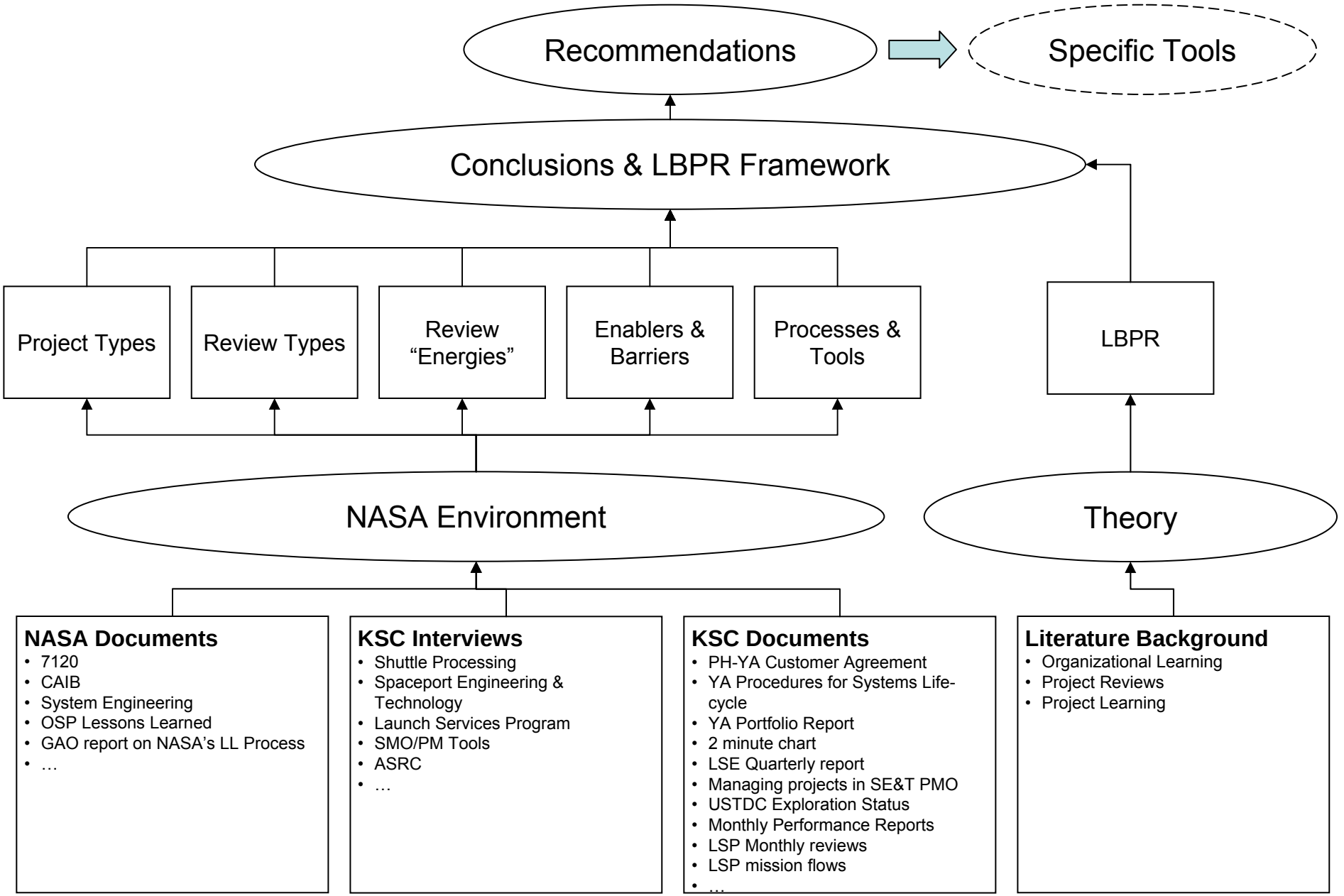
- **Purpose:**
  - Engage universities in world-class research that addresses significant problems in the discipline of Program/Project Management – with emphasis on NASA's aeronautics and space program challenges

- **Objectives:**
  - Exercise leadership to significantly advance the state of knowledge of program and project management
  - Develop a cadre of professionals to conduct world-class research and serve as a major resource for project management knowledge
  - Improve collaboration and data exchange between project management professionals
  - Facilitate hands-on project management training and developmental opportunities
  - Provide an atmosphere for open examination of innovative program and project management concepts
  - Promote the direct application of CPMR research to real NASA program and project management challenges

We are Learning with the NASA/KSC Community.



We are Developing the Pieces of the LBPR Story.



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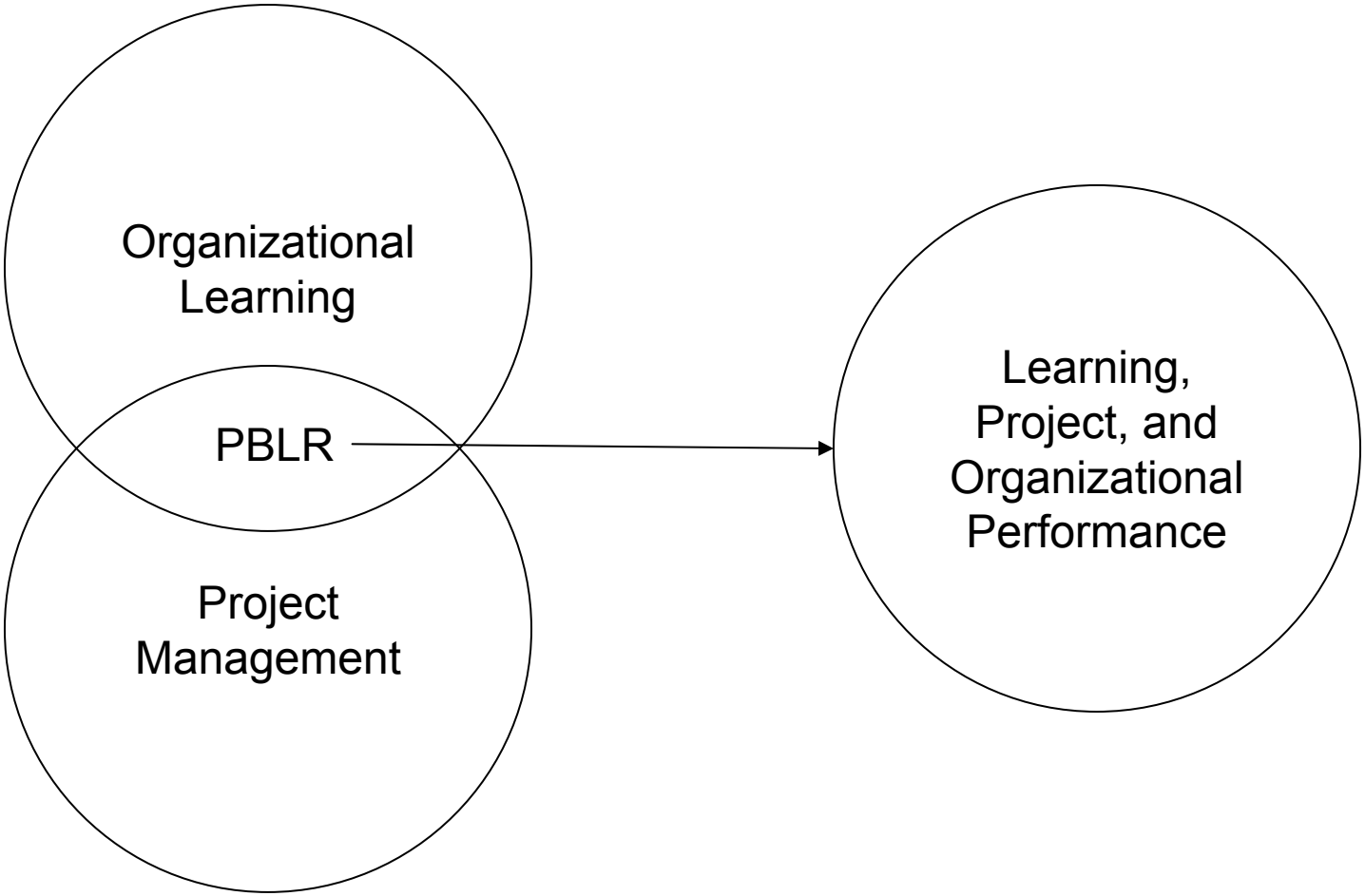
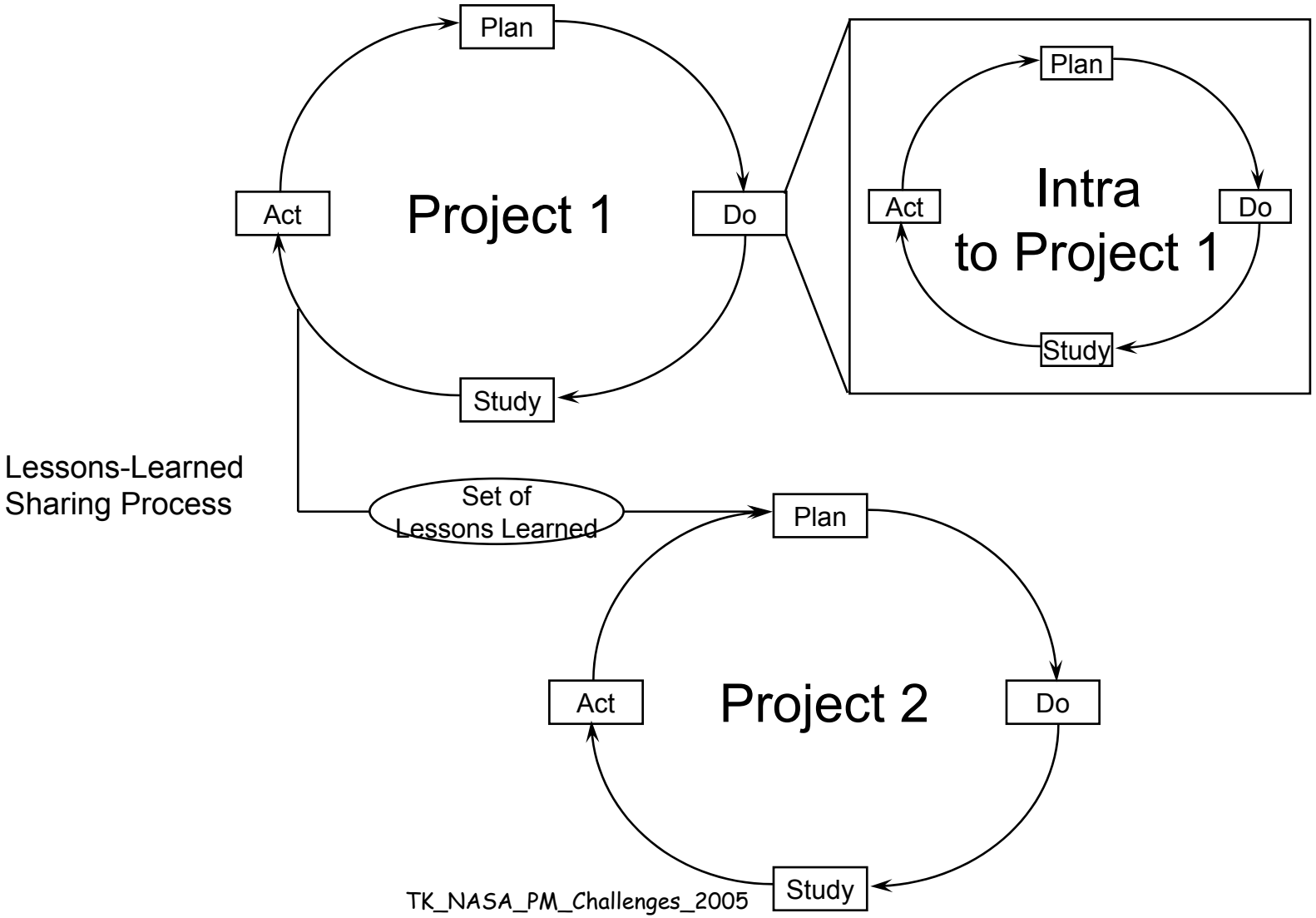
We're Understanding How to Make Learning within Reviews Routine.



Consistent Learning Approach through Reviews, Tools, and Metrics.



Learning-Based Project Reviews.

Level of Review	I	II	III	IV
Description	• Status • Understand the project status • Share facts about the project • Gather good news and "bad" news • Preparation readies team for learning and provides data for higher-level learning	• Status and control • Makes changes to project tasks, schedule, resources • Adjust the project to evolving circumstances • Focus on managing by exception • Drives out areas to focus on	• Improve current project practices • Change practices, processes, and tools within the project	• Improve the organizations core processes, capabilities, and tools • Change practices, processes, and tools within the organization—across all projects
Example Processes and Tools	• Formal monthly project reviews	• Formal monthly project reviews and the resulting working groups	• Risk management • Engineering review boards • Working groups • Informal monthly management review—focus on shared understanding and conversation	• Risk management • Engineering review boards • Working groups • Ad hoc lesson learned sessions

Trigger Event

Trigger Event

Trigger Event

The Message

Finding	Conclusion
1. Projects focus on delivering solutions.	1. What we need to learn about is a function of the project type.
2. Project reviews are aligned to project types.	2. We need to align the learning conversation to the reviews.
3. Reviews focus on different items.	3. We need to align the learning conversation with the intent of the review.
	4. We need to align the intent of the review with the expected learning that can be achieved.
4. Barriers and enablers exist for learning based project reviews.	5. We need to manage the enablers and barriers to learning.
5. Existing tools support learning.	6. We need to understand how to use existing tools from a learning perspective.
6. The reviews are a “system of learning”.	7. We need to understand how to better connect reviews and learning.
	8. We need to understand how to integrate the review process at multiple levels.
	9. We need to understand how to learn across a program.

Projects Focus on Delivering Solutions.

Solution Issues

- Strategic and programmatic issues
- Project management (cost, schedule risk)
- Systems engineering/technical (technical risk)
- Knowledge management/learning
- Customers
- Partners
- Leadership
- ?

What we need to learn about is a function of the project type.

Project Reviews Are Aligned to Project Types.

Project Type	Project Description	Project Reviews
Mission	• Launch and landing operations for a mission • Focuses on ensuring proper actions being taken, status and review of steps	• Series of formal launch readiness reviews • Systems engineering • Project management
Operational Support	• Specific product to update system • Specific application • Performance improvement, technology insertion for operational capability/upgrades, eliminate old/obsolete HW/SW processes (e.g., LSE, Industrial Engineering for Safety (ISE), Construction of Facilities (CofF), SLEP) • Tool development	• Systems engineering • Project management
Improvement Projects	• Internal organizational performance improvement efforts	• Project management
Technology Development	• Increase TRL • Facilities/systems to test new design (e.g. ATDC)	• Systems engineering • Project management
Research/Science	• Research/science	• Project management

(Need to align to 7120.5c when policy released)

We need to align the learning conversation to the reviews.

Reviews Focus on Different Items.

Focus of Reviews	Description of Reviews
Launch Campaign	• Formal reviews to ensure necessary steps are being taken to ensure a successful mission
Project Management	• Cost-schedule reviews for evaluation, control, and risk management • Monthly and quarterly program reviews • Internal project team reviews
Systems Engineering/Life-cycle	• Technical reviews (documents, requirements, processes, drawings) • Acceptance reviews (HW acceptance, use of problem reports, pedigree) • Design reviews (PDR, DCR, etc.) • Phase gates
Audits/Assessments	• External group reviewing the overall project and project procedures
Working Group	• Informal group of project team members working a specific issue

(Need to align to 7120.5c and systems engineering when policy released)

We need to align the learning conversation with the intent of the review.

Reviews Focus on Different Items.

Level of Review / Type of Review	I (Status)	II (Status & control)	III (Project Practices)	IV (Organizational Practices)
External Program Review	X	X	Limited—annual, informal process Can happen through portfolio metrics	Limited—annual, informal process Can happen through portfolio metrics
Internal Program Review	X	X	Limited—annual, informal process Can happen through portfolio metrics	Limited—annual, informal process Can happen through portfolio metrics
Project with Management	X	X	Limited—annual, informal process	Limited—annual, informal process
Internal Project Team	X	X	Limited—annual, informal process	Limited—annual, informal process

We need to align the intent of the review with the expected learning that can be achieved.

- Level III & IV learning is usually triggered from a level I or II review.
- A challenge is in determining when it is appropriate to move to level III and IV.

We Identified Enablers and Barriers to Learning.

Area	Issue	Enabler	Barrier
Learning Intent	**Expectations**	• Learning is viewed as a vital part of the project experience • Learning/reviews is a service and value to the project team	• The mindset is focused on getting the job done with learning not being as part of the job • Learning is not expected or asked for • The learning based conversations are not raised
	Attitudes	• People's willingness and ability to share and learn	• People don't see the value of project management, reviews, and learning
	Time & Resources	• Resources and time for learning are part of the project plan	• No resources or time to support learning
	Risk Tolerance	• If a safety issue, then drives higher level of learning	• Not a priority problem
People	**Involvement**	• Roles & responsibilities are clearly defined for PM, reviews, and learnings • The right stakeholders are involved (customer, project team, knowledgeable people, senior managers, "experience sharers")	• Team members are not involved • "Appointed" reviewers create make work, lack of knowledge
	Skills	• Skills to have • Ensure people have the skills to use • Ensure what people understand what it is	• Don't have the skills to interpret the data • PM trained • People understand why this is important and the value to do
Process	**Focus**	• Processes provide for a focus on learning • Focus on managing by exception • Drives out areas to focus on	• Process focus on fixing the problem/symptom and not root cause
	Procedures	• Consistent, structured reviews are held • Standard checklists by project type to drive status and learning	• Inconsistent PM philosophy, life-cycle approach, mindset, use of tools, use of reviews • Procedures do not call for learning
	Changes to Procedures	• Changes to procedures are easily made	• Need to keep practices consistent with organizational procedures—may not be able to change a procedure easily

We need to manage the enablers and barriers to learning.

We Identified Enablers and Barriers to Learning.

Area	Issue	Enabler	Barrier
Tools	**Data & Information**	• Provide data and information for learning	• Data does not get deep enough to support studying the root cause • Lack of timely, accurate data • Information held tightly
Projects	**Portfolio Reviews**	• Provides data across a large project sample to learn from • Using others work	• Many projects to go through • Many high priorities • Not an integrated effort
	Plans	• Clear project requirements—baseline data • Clear requirements for learning	• No formal plan to report against • Plans not finalized • Too early in the life-cycle—not yet producing a product
	Legitimacy of the Project	• Real project with a customer agreement and advocate	• Make work project with little customer or advocate support
Relation-ships	**Contractual**	• Contracts call for learning processes and products	• Contractual constraints do not support learning by not resources, not defining learning as a deliverable, and not addressing intellectual property sharing • In ability to get to the right data and people
	Working Relationships	• Open, honest communication • Teamwork	• Strained relationships

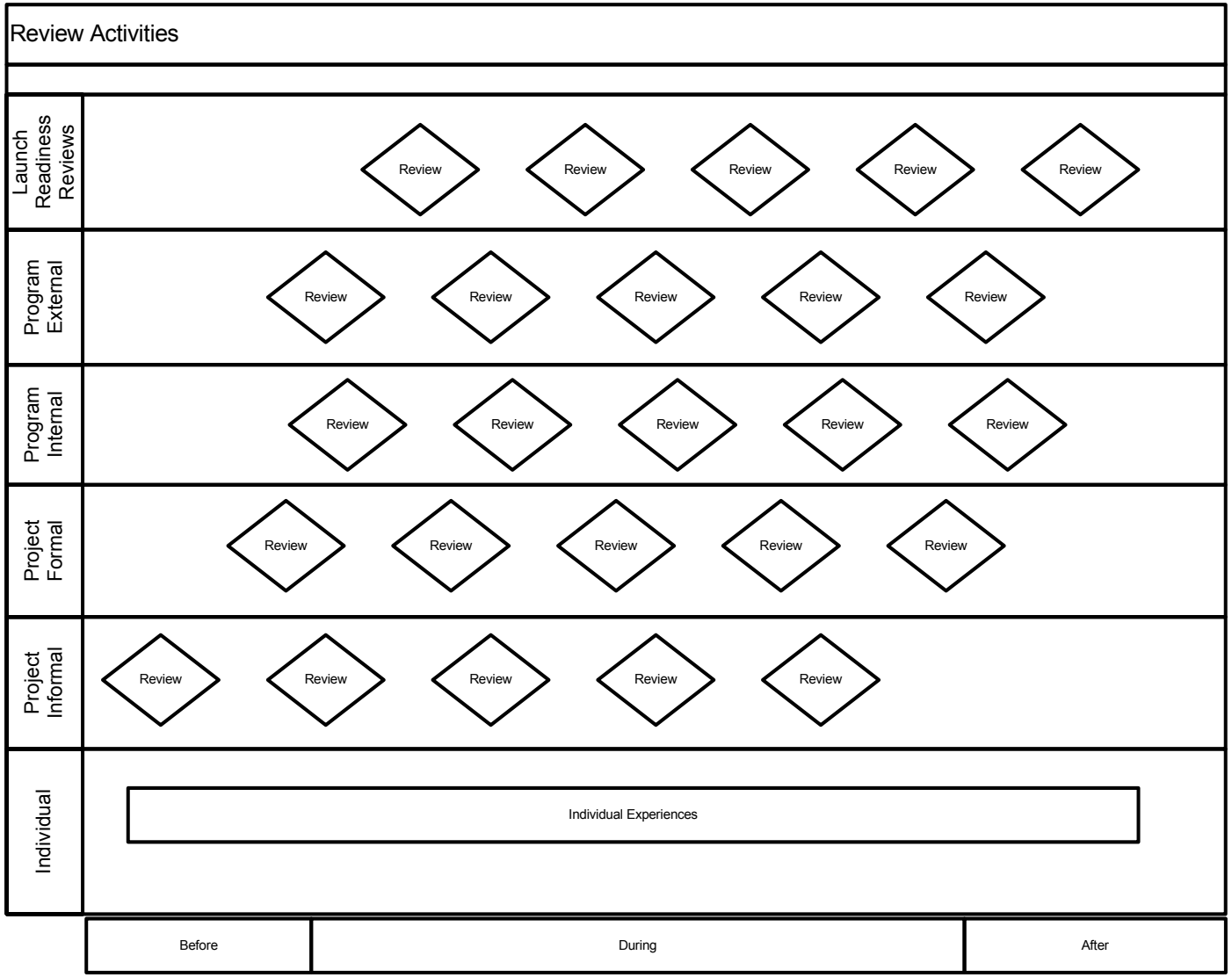
We need to manage the enablers and barriers to learning.

Existing Tools Support Learning.

Tools / Type of Review	Existing Tools (Examples)
External Program Review	• Cost phasing plans
Internal Program Review	• Program/portfolio metrics • Milestone report: delay cause, delay expectation, corrective action • Formal reviews (e.g., PRCBs)
Project with Management	• 2 minute charts • Threat charts • Monthly reports • Monthly reviews • Risk reviews
Internal Project Team	• Weekly team meetings • Standardized weekly report • Running status sheets • Internal peer reviews • Mission monthly management review (informal group session)
Crosscutting	• KDPs—Process definitions • KDP checklists

We need to understand how to use existing tools from a learning perspective.

The Reviews are a “System of Learning”.



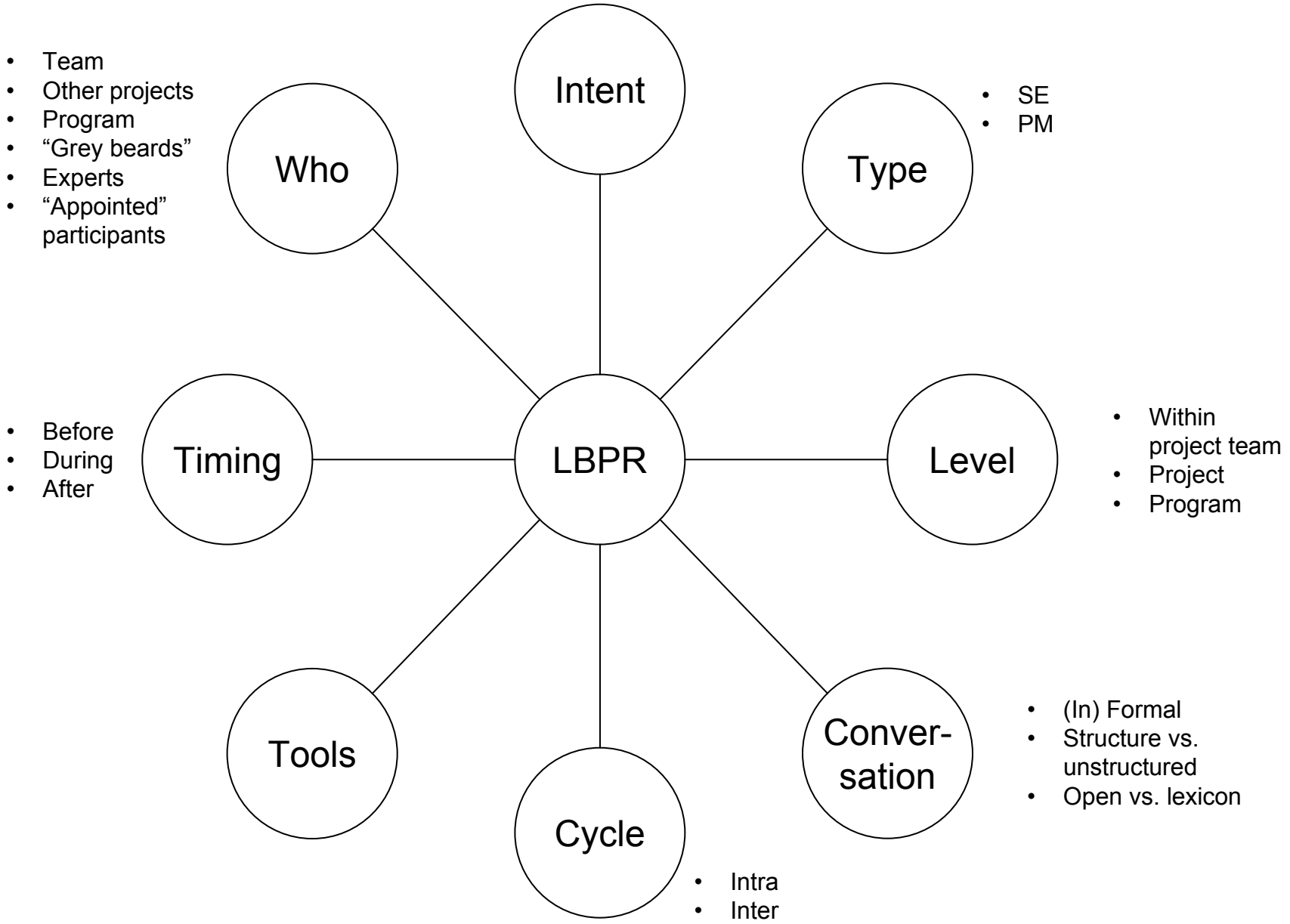
Variables

vs.

Learning Level
I, II, III, IV

We need to understand how to better connect reviews and learning.

We Need to Understand how to Combine the Variables.



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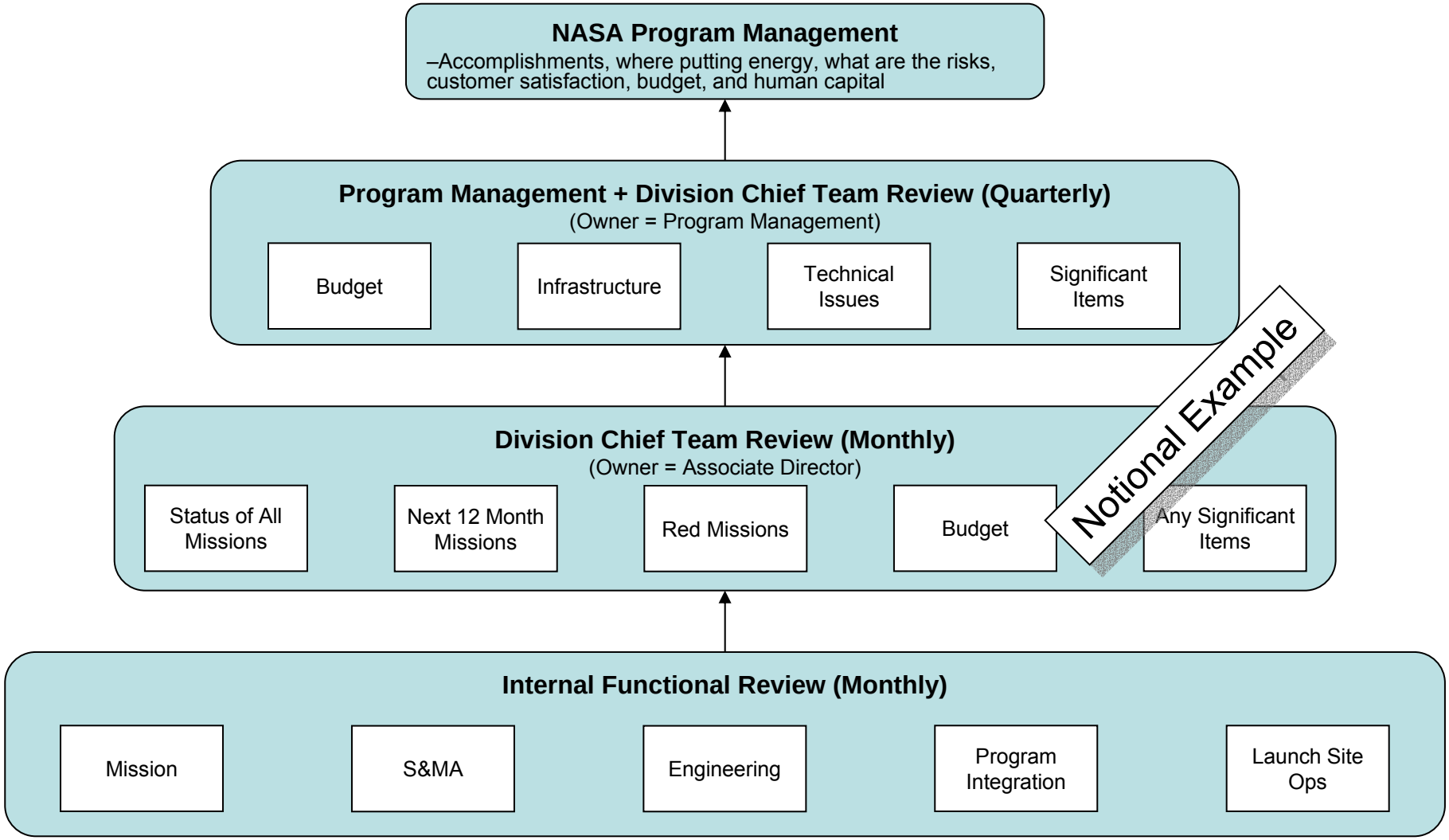
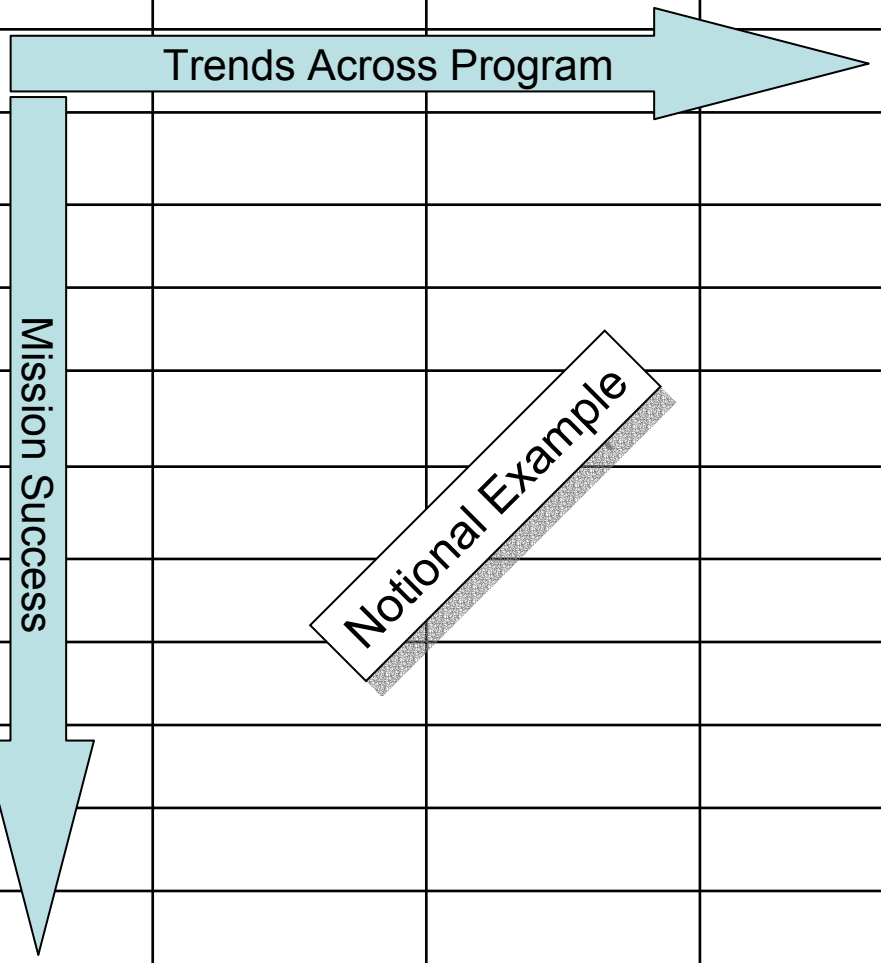


We need to understand how to integrate the review process.

The Reviews are a "System of Learning".

Source \ Mission	M1	M2	…	Mn	Total
S&MA					ΣS&MA Problems across all missions
Technical Area 1					ΣTA1 Problems across all missions
Technical Area 2					ΣTA2 Problems across all missions
Technical Area 3					ΣTA3 Problems across all missions
Technical Area n					ΣTAn Problems across all missions
Launch Site Integration & Support					ΣLSI Problems across all missions
Program Integration—Cost					ΣPI-Cost Problems across all missions
Schedule					ΣSchedule Problems across all missions
Customer Satisfaction					ΣCustSat Problems across all missions
Contract Management					ΣContract Problems across all missions
Mission Management					ΣMM Problems across all missions
Total	ΣAll Problems across mission M1	ΣAll Problems across mission M2		ΣAll Problems across mission Mn	



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Questions to Leave With

- How do we now learn in our projects?
- What energy are we devoting to learning?
- How well are we managing our enablers and barriers to learning?

- What do we need to start, stop, continue doing to drive learning in our projects?

You are Invited to Participate!

- Why
  - Help improve the ideas
  - Help improve NASA
- What
  - Share observations
  - Share processes and tools you use
  - Share names of people with “best practices”
- How
  - Contact me
  - 407-823-5645
  - tkotnour@mail.ucf.edu